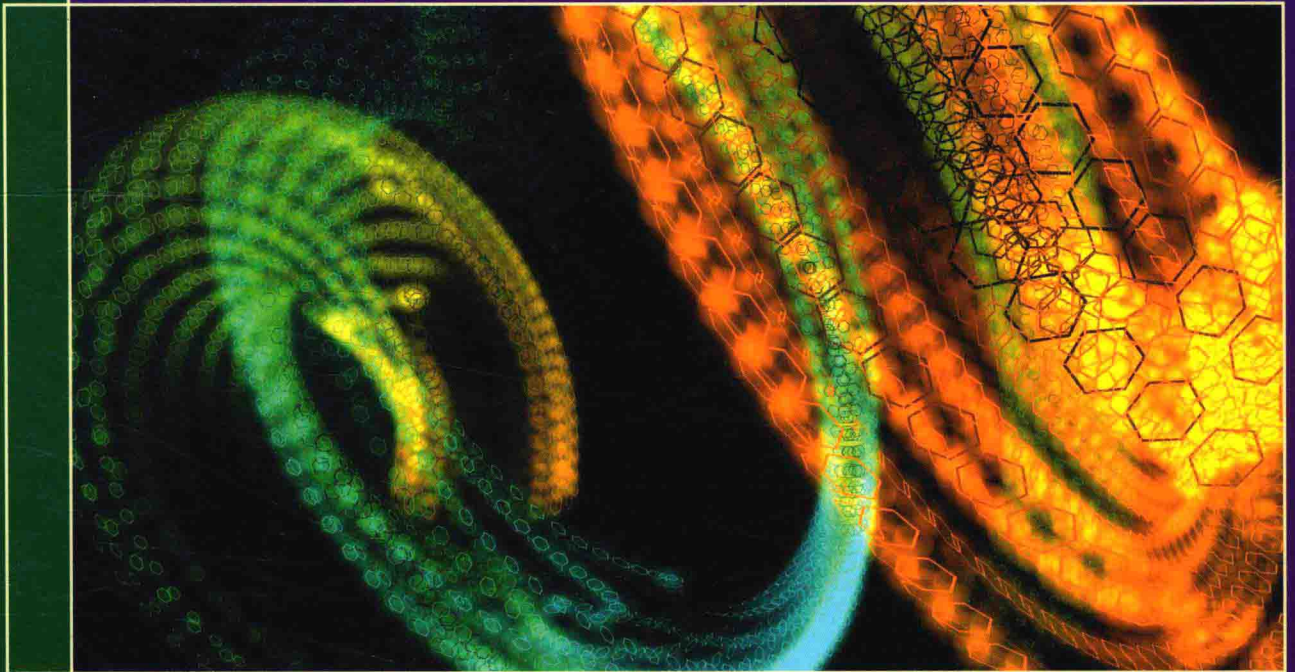


Multimedia: Making It Work

Ninth Edition



Tay Vaughan

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Multimedia: Making It Work, Ninth Edition

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Multimedia: Making It Work

Ninth Edition

For Marcia Van Gemert

About the Author

Tay Vaughan is a widely known multimedia authority who has lectured and taught around the world. He has developed and produced projects for clients including Apple, Microsoft, Kodak, Lotus (IBM), Northern Telecom, Novell, Sun (Oracle), and Varian. He is president of Timestream, a multiformat design and publishing company.

About the Technical Editor

Dr. Eileen Webb is a Principal Lecturer and Subject Leader for Digital Media and Web Design in the School of Computing at Teesside University in the UK. She has worked at the university for 20 years, during which time she also completed a Ph.D. in Learning Technology. She has extensive experience of curriculum development and teaching in information technology, multimedia, and web design courses at both the undergraduate and postgraduate levels. She has presented at national and international conferences and is credited with a number of peer-reviewed conference and journal publications. Dr. Webb also holds a master's degree in Information Technology from Teesside University, a Postgraduate Certificate in Education from Huddersfield University, and a bachelor's degree in Biochemistry and Genetics from Newcastle University. She is a Member of the British Computer Society, a Certified IT Professional, and a Fellow of the Higher Education Society.

ABOUT THIS BOOK

Important Multimedia Skills

Multimedia offers many career paths that can lead to occupations in such fields as graphic design, web design, animation, audio and video production, and project management. To become competent in any multimedia field, however, you need to learn the fundamental multimedia concepts first.

Multimedia: Making It Work builds a foundation for success in the discipline of multimedia by introducing you to the multimedia building blocks of text, images, sound, animation, and video while going one step further to develop an understanding of the process of making multimedia.

Learning Objectives set the goals of the chapter

Quote sidebars provide insight from experienced multimedia professionals

Keywords, identified in red, point out important vocabulary and definitions you need to know

Notes, Tips and Warnings create a road map for success

CHAPTER 3

Images

In this chapter, you will learn how to:

- Work out a logical scheme by placing your approach, organizing your tools, and computer work
- Differentiate the various 3-D elements and limitations of an image
- Describe the use of colors
- Cite the various image file types used in multimedia

Before You Start to Create

Again during project, the screen is a blank canvas, ready for you to stretch and reshape. Express your craft. The screen will change again as you experiment, as you draw new objects and throw out old ones. Indeed, many multimedia designers are known to experience a mild shiver of **ignition frisson** as they pull down the New menu and draw their first colors onto a screen. Just so, this screen represents a powerful and subjective tool for channeling creativity.

WARNING Multimedia designers are regularly lured into agonizingly steep learning curves, long fundamental creative, multimedia may become a calling, not a profession.

Engaging and Motivational—The author explains technical concepts in a clear and interesting way using real-world examples.

2 Multimedia: Making It Work

enough choices to challenge even bright people who can read. More than television, with its 50 or 100 or even 400 available channels, the Web offers an explorer's paradise of billions of HTML documents and, through "social media," immediate contact with many millions of friends and followers.

Yahoo! Search once claimed "Our index now provides access to over 20 billion items. For those who are curious, this update includes just over 19.2 billion web documents, 1.6 billion images, and over 50 million audio and video files." (Until 2009, the search engines displayed, bragged about) the total number of documents they indexed, in the billions. These huge numbers were very inaccurate, it turned out, and they have ceased making precise statements about quantity. A trick in the Google search engine is to type in "ate" and the name of a domain. Google will tell you how many pages from that domain are indexed.

As bandwidth improves and more information is successfully embedded within these documents and delivered to many devices—desktop and handheld, or even eye-readable—developers of content will not escape the difficult design issues discussed in Chapter 10. Who is the audience? What words should I use? Under what conditions? What typeface is best?

The Power of Meaning

Even a single word may be evoked in many meanings, so as you begin working with text, it is important to cultivate accuracy and consciousness in the specific words you choose. In multimedia, these are the words that will appear in your titles, menus, and navigation aids as well as in your narrative or content.

Today's poets and songwriters concentrate text by distilling lengthy prose into few words heavy with meaning. Advertising wordsmiths render the meaning of entire product lines into an evocative single word, logo, or tag line. Multimedia authors weave words, symbols, sounds, and images, and then blend text into the mix to create integrated tools and interfaces for acquiring, displaying, and disseminating messages and data.

Walter Benjamin, Philosopher/Writer

I'd like to write something that comes from things the way wine comes from grapes.

Makes Learning Fun!—Rich, colorful text and artwork bring multimedia techniques and technologies to life.

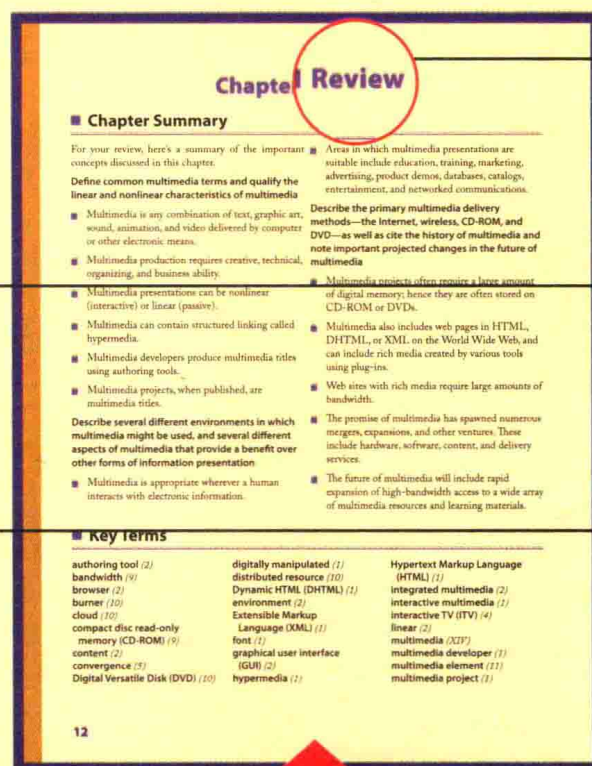
Proven Learning Method Keeps You on Track

Multimedia: Making It Work is structured to give you a comprehensive understanding of multimedia tools, technologies, and techniques. The book's active learning methodology guides you beyond mere recall and through thought-provoking sidebars, essay topics, and lab projects. It is designed to foster your creativity and the development of critical-thinking and communication skills.

Effective Learning Tools

This feature-rich book is designed to make learning easy and enjoyable as you develop the skills and abilities that will aid you in your multimedia education and career. Woven directly into the text are the author's own personal insights gained from

more than 20 years in the multimedia industry. This expertise, combined with a personal and humorous style, makes learning interesting, motivational, and fun.



Chapter Review sections provide concept summaries and key term lists, as well as questions and projects

Suggested Resources point to web sources to aid you in the creation and development of multimedia projects

First Person notes employ the author's personal experiences to emphasize key points

Provides Professional Insight—Quotes from experts in the field and notes from the author put key concepts into the context of real-world situations.

Robust Learning Tools—Summaries, key terms lists, quizzes, essay questions, and lab projects help you practice skills and measure progress.

Each chapter includes:

- **Learning objectives** that set measurable goals for chapter-by-chapter progress
- **Color artwork** that makes difficult concepts easy to visualize and understand
- Shared personal expertise from experts in the field in the form of **First Person** notes, sidebar **quotes**, **Vaughan's Laws**, and **Vaughan's Rules**
- **Notes, Tips, and Warnings** that highlight important concepts and guide you through difficult areas
- Highlighted **Key Terms**, **Key Terms lists**, and **Chapter Summaries** that provide you with an easy way to review important concepts and vocabulary
- Challenging **End-of-Chapter Quizzes** that include vocabulary-building exercises, multiple-choice questions, essay questions, and lab projects

Acknowledgments

This ninth edition of *Multimedia: Making It Work* includes the cumulated input and advice of many colleagues and friends over almost a quarter century. Each time I revise and update this book, I am pleased to see that the acknowledgments section grows. Indeed, it is difficult to delete people from this (huge) list because, like the stones of a medieval castle still occupied, new and revised material relies upon the older foundation. I will continue accumulating the names of the good people who have helped me build this edifice and list them here, at least until my publisher cries “Enough!” and provides substantial reason to press the DELETE key.

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Introduction

Since the first edition of this book in 1992, it has been necessary to update its content every few years. In writing this ninth edition, it is more than ever clear that changes in multimedia tools, technologies, and delivery platforms are occurring at an increasingly rapid pace. Indeed, the rate of change itself seems exponential as new ideas and new applications of multimedia are born, gain traction, and then bear yet newer ideas in often unpredictable and immediate follow-ons. Overnight, words like “tweet” and “selfie” enter the lexicon and explode through the Internet into common usage. With cloud computing and ever-more powerful browsers, cross-platform difficulties among Windows, Mac, and Linux systems are diminished, while the ubiquity of tablets, mobile devices, and smartphones presents new miniaturization and serious human interface issues. With modern mechanical designs, new tools are invented: “spudgers” are as necessary now as screwdrivers in the world of computer and electronic gear repair.

Happily for the longevity of this book, the fundamental concepts and techniques required to work with the elements of multimedia remain unchanged, and there are serious learning curves to climb before you can make your multimedia-capable computer stand up and dance!

This is a book about the basic parts of multimedia as much as about how to sew these parts together with current technology and tools. It is a book that shows you how to use text, images, sound, and video to deliver your messages and content in meaningful ways. It is about designing, organizing, and producing multimedia projects of all kinds and avoiding technical and legal pitfalls along the way. Above all, it is a practical guide to making multimedia, complete with keywords, quizzes, exercises, tips, pointers, and answers.

The first part deals with the basic elements of multimedia and the skills required to work with them. Hardware and software tools are described in detail. You will learn about the importance of text and how to make characters look pretty, about making graphic art on your computer and how to choose colors, and about how to digitize sound and video segments. You will learn about human interaction and how to design a user-friendly computer interface. Then you will be introduced to the step-by-step creative and organizing process that results in a finished multimedia project. Today, the fastest moving wavefront in multimedia may be seen on the Internet, so I have updated and enlarged the chapters about designing, creating, and delivering multimedia for the Web and for Internet-connected multimedia devices. Indeed, with this ninth edition, I have included a new chapter about mobile devices, tablets, and smartphones.

I have written this book for people who make or want to make multimedia, for people who gladly take up new challenges and are unafraid of intensely creative work. The words and ideas of this book are the harvest of many years in the computer industry and of hands-on experience deep in the factory where multimedia is being made. The book is intended to be, above all, useful.

I have made a great effort to include in this book references to as much multimedia software and hardware as I could, trying not to miss any players. But because the industry is fast paced and rapidly evolving, and because, while writing this book, I have rediscovered the finite limits of my own time, I am sure some have fallen into the bit bucket anyway. Immutable physical laws have prevented me from including the fine details of 40 or 50 hardware and software manuals and technical resources into the pages allowed for this book. The distillation presented here should, however, point you toward further information and study. I have also made a great effort to double-check my words and statements for accuracy; if errors have slipped past, they are mine alone.

This “Black Stick” opens Apple iPhones and iPods, Mac Laptops and Desktops. Also used to open MP3/MP4 Players, Mobile Phones, Laptops, PCs, and any other Electronic Device. Will not scratch surfaces. Temperature resistant. Flat (screwdriver) end for spudging wire leads. Notch end for hooking and pulling wires or components. Pointed end used to form leads, probe, point, and hold objects for soldering. 6" long.



Spudger: Three Tools In One!

Two decades ago, people's experience on the information highway was a smooth ride paved with behavioral etiquette and with many kindnesses evolved from properly socialized dot-EDU users. Commerce was prohibited. Discourse and idea exchange through e-mail and newsgroups was encouraged. Language shortcuts such as IMHO (In My Humble Opinion) and smiley faces were de jure. RTFM was reserved for only the most surly.

Who could have predicted the impact of commerce, when the dot-com top-level domain was opened for business? Well, Adam Smith's free hand of capitalism is at work, straining First Amendment rights to free speech and inciting road rage on the information highway. Now you can buy a million e-mail addresses, and if only half a percent of recipients respond to your body part enhancement, vitamin, or mortgage rate spam, you can make a fortune. Not only are computer platforms and multimedia implements changing, so is our notion of etiquette. With the tools described in this book, you will be able to shape the very nature of information and how it is accessed and presented, and you will invent the future. Remember to be polite: some people suggest that if you go flying back through time and you see somebody else flying forward into the future, it's probably best to avoid eye contact.

Many years ago, after completing a book about HyperCard, I swore never to write another. Writing a book is much like childbirth, I believe. In the beginning, it gestates slowly, usually over a few months. Then it ramps up inexorably and quickly toward deadline, until all attention is focused upon the delivery itself, and the pain and workload are great. Editors cry, "Push." Afterwards, you remember it was rough, but memories of the pain itself become diffused, and one is only too easily persuaded to do it again. I am glad to share my multimedia experiences with you, and hope that in reading this book you will become better at what you do.

Tay Vaughan
Scientists' Cliffs
Port Republic, Maryland
May 2014

INSTRUCTOR AND STUDENT ONLINE LEARNING CENTER

For instructor and student resources, check out the Online Learning Center, www.mhprofessional.com/Vaughan-MultimediaOLC9e.com.

Additional Resources for Students

The Student Center on the Online Learning Center features more information about the book's author, table of contents, and key features, as well as an electronic sample chapter.

Additional Resources for Instructors

Instructor support materials are provided on the Online Learning Center's Instructor Download page. The Instructor Download page features the following:

- **Password protection** to ensure instructor-only use
- **Answer Keys** for the end-of-chapter textbook quizzes
- **Instructor's Manual** that contains learning objectives, classroom preparation notes, instructor tips, and a lecture outline for each chapter
- Engaging **PowerPoint slides** on the lecture topics with color artwork from the book
- **Test Bank** of questions organized by chapter in Microsoft Word and EZ Test formats
 - Access to EZ Test Online, which allows you to generate a wide array of tests, with automatic grading
 - Hundreds of questions and a wide variety of question types and difficulty levels, enabling you to customize each test to maximize student progress
- **LMS cartridges** may also be available upon request; contact your sales representative

To access the Instructor Download page, click the Instructor Requests link on the left side of the main Online Learning Center page to log in. If you do not have a username and password, click the Contact My Sales Rep link to request your username and password from your local sales representative.

Contributors to the Instructor Resources

Writer

Laura Osterweis

Associate Professor

Communication Arts Department

Framingham State University

Technical Editor

Iain Thomson

Journalist

The Register

CHAPTER 1

What Is Multimedia?

In this chapter, you will learn how to:

- Define common multimedia terms and qualify the linear and nonlinear characteristics of multimedia.
- Describe several different environments in which multimedia might be used, and several different aspects of multimedia that provide a benefit over other forms of information presentation
- Describe the primary multimedia delivery methods—the Internet, wireless, CD-ROM, and DVD—as well as cite the history of multimedia and note important projected changes in the future of multimedia

MULTIMEDIA is an eerie wail as two cat's eyes appear on a dark screen. It's the red rose that dissolves into a little girl's face when you press "Valentine's Day" on your iPhone. It's a small window of video laid onto a map of India, showing an old man recalling his dusty journey to meet a rajah there. It's an e-catalog of hybrid cars with a guide to help you buy one. It's a real-time video conference or e-meeting with colleagues in Paris, London, and Hong Kong, using whiteboards and microphones on your office computer. At home, it's an interactive geometry lesson for a fifth-grader. At the arcade, it's goggle-faced kids flying fighter planes in sweaty, virtual reality. On a DVD, it's the interactive video sequences (or screen hot spots) that explain how the *Harry Potter* movies were made.

Multimedia is any combination of text, art, sound, animation, and video delivered to you by computer or other electronic or digitally manipulated means. It is richly presented sensation. When you weave together the sensual elements of multimedia—dazzling pictures and animations, engaging sounds, compelling video clips, and raw textual information—you can electrify the thought and action centers of people's minds. When you give them interactive control of the process, they can be enchanted.

This book is about creating each of the elements of multimedia and about how you can weave them together for maximum effect. This book is for computer beginners as well as computer experts. It is for serious multimedia producers—and for their clients as well. It is for desktop publishers and video producers who may need a leg up as they watch traditional methods for delivery of information and ideas evolve into new, technology-driven formats. This book is also for hobbyists who want to make albums and family histories on the World Wide Web; for mainstream businesses who want to illustrate word-processed documents and spreadsheets with audio, video, and graphic animations; for public speakers who want to use animation and sound on large monitors and auditorium projection systems to present ideas and information to an audience; for information managers who want to organize and distribute digital images, sound, video, and text; and for educators and trainers who want to design and present information for learning.

If you are new to multimedia and are facing a major investment in hardware, software, and the time you will need to learn each new tool, take a gradual approach to these challenges. Begin by studying each element of multimedia

Contents

ACKNOWLEDGMENTS xi

INTRODUCTION xv

1 What Is Multimedia? 1

Definitions 1

Where to Use Multimedia 2

Multimedia in Business 2

Multimedia in Schools 3

Multimedia at Home 5

Multimedia in Public Places 7

Virtual Reality 8

Delivering Multimedia 9

CD-ROM, DVD, Flash Drives 9

The Broadband Internet 10

2 Text 18

The Power of Meaning 20

The Power and Irregularity of English 22

About Fonts and Faces 22

Cases 24

Serif vs. Sans Serif 25

Using Text in Multimedia 26

Designing with Text 26

Fields for Reading 37

HTML Documents 40

Computers and Text 41

The Font Wars Are Over 42

Character Sets and Alphabets 44

Mapping Text Across Platforms 47

Languages in the World of Computers 50

Font Editing and Design Tools 53

Fontographer 54

Making Pretty Text 54

Hypermedia and Hypertext 57

The Power of Hypertext 58

Using Hypertext 59

Searching for Words 60

Hypermedia Structures 61

Hypertext Tools 63

3 Images 70

Before You Start to Create 70

Plan Your Approach 71

Organize Your Tools 71

Configure Your Computer Workspace 71

Making Still Images 72

Bitmaps 73

Vector Drawing 81

Vector-Drawn Objects vs. Bitmaps 83

3-D Drawing and Rendering 84

Color 89

Understanding Natural Light and Color 91

Computerized Color 92

Color Palettes 96

Image File Formats 99

Image File Compression 100

4 Sound 108

The Power of Sound 108

Digital Audio 110

Making Digital Audio Files 112

Editing Digital Recordings 115

MIDI Audio 117

MIDI vs. Digital Audio 122

Multimedia System Sounds 124

Audio File Formats 125

Vaughan's Law of Multimedia Minimums 127

Adding Sound to Your Multimedia Project 128

Space Considerations 129

Audio Recording 130

Keeping Track of Your Sounds 132

Audio CDs 132

Sound for Your Mobile Phone 133

Sound for the Internet 133

Testing and Evaluation 135

Copyright Issues 135

5 Animation 144

- The Power of Motion 144
- Principles of Animation 145
- Animation by Computer 146
 - Animation Techniques* 148
 - Animation File Formats* 153
 - Motion with SVG in HTML5* 153
- Making Animations That Work 154
 - A Rolling Ball* 155
 - A Bouncing Ball* 156
 - Creating an Animated Scene* 159

6 Video 166

- Using Video 166
- How Video Works and Is Displayed 167
 - Analog Video* 168
 - Digital Video* 170
 - Displays* 171
- Digital Video Containers 174
 - Codecs* 175
 - Video Format Converters* 177
- Obtaining Video Clips 179
- Shooting and Editing Video 180
 - Camcorders* 180
 - Smartphones and Tablets* 182
 - Storyboarding* 183
 - Lighting* 184
 - Chroma Keys* 185
 - Composition* 186
 - Titles and Text* 187
 - Nonlinear Editing (NLE)* 189

7 Making Multimedia 196

- The Stages of a Multimedia Project 196
- What You Need: The Intangibles 197
 - Creativity* 197
 - Organization* 198
 - Communication* 200
- What You Need: Multimedia Skills 200
 - The Team* 201
 - The Sum of Parts* 204

What You Need: Hardware 204

- Windows vs. Macintosh* 205
- Connections* 208
- Memory and Storage Devices* 211
- Input Devices* 214
- Output Devices* 217

What You Need: Software 218

- Text Editing and Word Processing Tools* 221
- OCR Software* 222
- Painting and Drawing Tools* 222
- 3-D Modeling and Animation Tools* 224
- Image-Editing Tools* 226
- Sound-Editing Tools* 227
- Animation, Video, and Digital Movie Tools* 227
- Helpful Accessories* 228

What You Need: Authoring Systems 229

- Helpful Ways to Get Started* 229
- Making Instant Multimedia* 230
- Types of Authoring Tools* 233
- Objects* 236
- Choosing an Authoring Tool* 237

8 Planning and Costing 246

The Process of Making Multimedia 246

- Idea Analysis* 248
- Pretesting* 252
- Task Planning* 252
- Prototype Development* 254
- Alpha Development* 256
- Beta Development* 256
- Delivery* 256

Scheduling 257

Estimating 260

- Billing Rates* 262

RFPs and Bid Proposals 265

- The Cover and Package* 270
- Table of Contents* 270
- Needs Analysis and Description* 270
- Target Audience* 271
- Creative Strategy* 271
- Project Implementation* 271
- Budget* 272